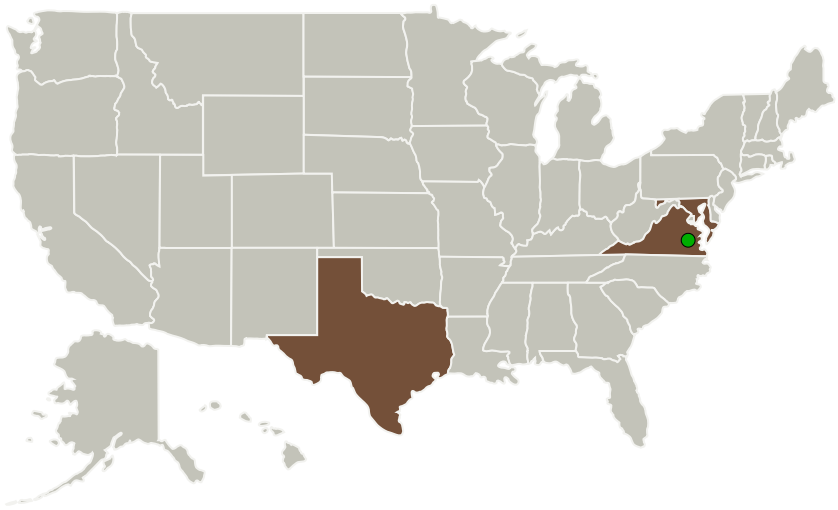
A Cubesat Hyperspectral Imager, Phase I

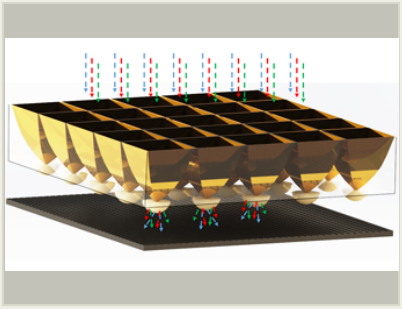
Completed Technology Project (2016 - 2017)

Project Introduction

Mapping spectrometers have been extremely useful in multiple NASA applications, from Earth climate monitoring to identifying hydrocarbon lakes on Titan. Traditionally, imaging spectroscopy systems are not only heavy but also large in order to accommodate the long path lengths needed for spectral separation. There are several varieties, such as push-broom and scanning imaging spectrometers, but hyperspectral framing cameras are still relatively rare and are often untenably bulky. However, framing cameras place fewer restrictions on platform motion and can complete their data acquisition more rapidly, which allows more time and power to be dedicated to other instruments. A chip-scale full-frame hyperspectral imager would provide the ideal balance: small, light, no moving parts, low power requirements, and suitable for numerous mission architectures. Nanohmics, teaming with Dr. Hewagama at the University of Maryland, proposes to develop a chip-scale hyperspectral imaging technology as a commercial solution for ultra-compact UV-VIS hyperspectral cameras for smallsat and CubeSat applications. The technology will provide spectral dispersion orders of magnitude smaller and lighter than grating or prism options with full spatial-spectral registration.

Primary U.S. Work Locations and Key Partners





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Organizations Performing Work	Role	Type	Location
Nanohmics, Inc.	Lead Organization	Industry	Austin, Texas
Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia
University of Maryland-College Park(UMCP)	Supporting Organization	Academia Asian American Native American Pacific Islander (AANAPISI)	College Park, Maryland

Primary U.S. Work Locations	
Maryland	Texas
Virginia	

Project Transitions

June 2016: Project Start

June 2017: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/139604)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Nanohmics, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Chris Mann

Co-Investigator:

Christopher A Mann

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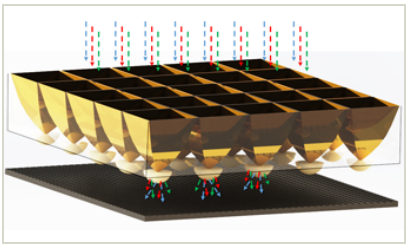
Images

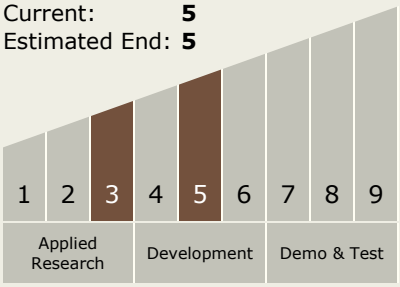


Briefing Chart Image
A cubesat hyperspectral imager, Phase I
(https://techport.nasa.gov/image/132288)

Final Summary Chart Image
A cubesat hyperspectral imager, Phase I Project Image
(https://techport.nasa.gov/image/129531)

Technology Maturity (TRL)

Start: **3**
Current: **5**
Estimated End: **5**



Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.1 Detectors and Focal Planes